

Hispaniolan Annulariidae (Gastropoda), primarily from the Barahona Peninsula: New taxa and notes

G. Thomas Watters

Department of Evolution, Ecology, and Organismal Biology
Ohio State University
Columbus, OH 43212 USA
Watters.1@osu.edu

ABSTRACT

Eleven new taxa of Hispaniolan Annulariidae are described: *Abbottella* (*Abbottella*) *urbana* new species, *Chondropoma* (*Chondropoma*) *crystallinum* new species, *Chondropoma* (*Chondropoma*) *duffyhookorum* new species, *Chondropoma* (*Chondropoma*) *vanattae polychroma* new subspecies, *Chondropoma* (*Wetmorepoma*) *morsecodex* new species, *Parachondria* (*Parachondria*) *gettemani* new species, *Articulipoma* *rhodei* new species, *Chondropomium* *blaincorum* new species, *Chondropomium* *lynx* new species, *Chondropomium* *eusarcum saonaense* new subspecies, and *Licina* *bartschi* new species. Based on new material, *Chondropoma* (*Chondropoma*) *manielense montivagum* Bartsch, 1946, is synonymized with the nominal subspecies *Chondropoma* (*Chondropoma*) *manielense manielense* Bartsch, 1946 and *Chondropoma* (*Chondropoma*) *quisquense sculptior* Bartsch, 1946 is synonymized with the nominal subspecies *Chondropoma* (*Chondropomium*) *quisquense quisquense* Bartsch, 1946. *Chondropoma* (*Chondropomium*) *vernuculatum* sensu lato Bartsch, 1946 is moved to *Crossepoma* based on opercular features. The type locality of *Chondropoma* (*Chondropomium*) *vernuculatum sallei* Bartsch, 1946 is restricted to Cabral, Barahona Province, Dominican Republic. The type locality of *Choanopoma* *solutum* Pfeiffer, 1852 is restricted to the southern edge of Los Haitises Mountains, N of Majagual, ca. 12 km NW of Sabana Grande de Boyá, Monte Plata Province, Dominican Republic. The type locality of *Chondropoma* *loweanum* Pfeiffer, 1852 is restricted to Loma del Aguacate, Sierra Martín Gracia, Barahona Province, Dominican Republic. Distributional and habitat notes are given for additional species.

Additional keywords: Hispaniola, Dominican Republic, habitat

INTRODUCTION

Bartsch (1946) and Watters (2006) recognized the Barahona Peninsula of the Dominican Republic as an area of high endemism for the Annulariidae. Bartsch (1946) described 21 species of Annulariidae from the peninsula out of 67 for all of the Dominican Republic. As impressive as this seems, on closer inspection it is apparent that Bartsch's species all came from relatively few sites in the eastern half of the peninsula; the western half has never been adequately sampled or reviewed.

Recent collections there and re-examination of older collections have revealed a wealth of previously unknown species (Watters and Duffy (2010a, 2010b), Watters (2010)), the description of which is continued here.

MATERIALS AND METHODS

Length is measured from the tip of the apex or decolated spire to the end of the outer aperture. Width is measured as the maximum dimension in a plane with the aperture perpendicular to the axis of coiling. Spiral sculpture is counted from the suture to the inside of the umbilicus. Dimensions in captions refer to shell length. Shells are solute if a portion of the final whorl is detached from the previous whorl; shells are adnate if they are not detached. Inner apertural lips are exerted if they protrude beyond the plane of the outer lips.

Abbreviations used in the text are: BMSM, The Bailey-Matthews Shell Museum, Sanibel, Florida, USA; GTW, collection of the author, Columbus, Ohio, USA; NIMUK, Natural History Museum, London, UK; OSUM, Ohio State University Museum of Biological Diversity, Columbus, Ohio, USA; UF, Florida Museum of Natural History, Gainesville, Florida, USA.

SYSTEMATICS

Family Annulariidae Henderson and Bartsch, 1921
Subfamily Annulariinae Henderson and Bartsch, 1921

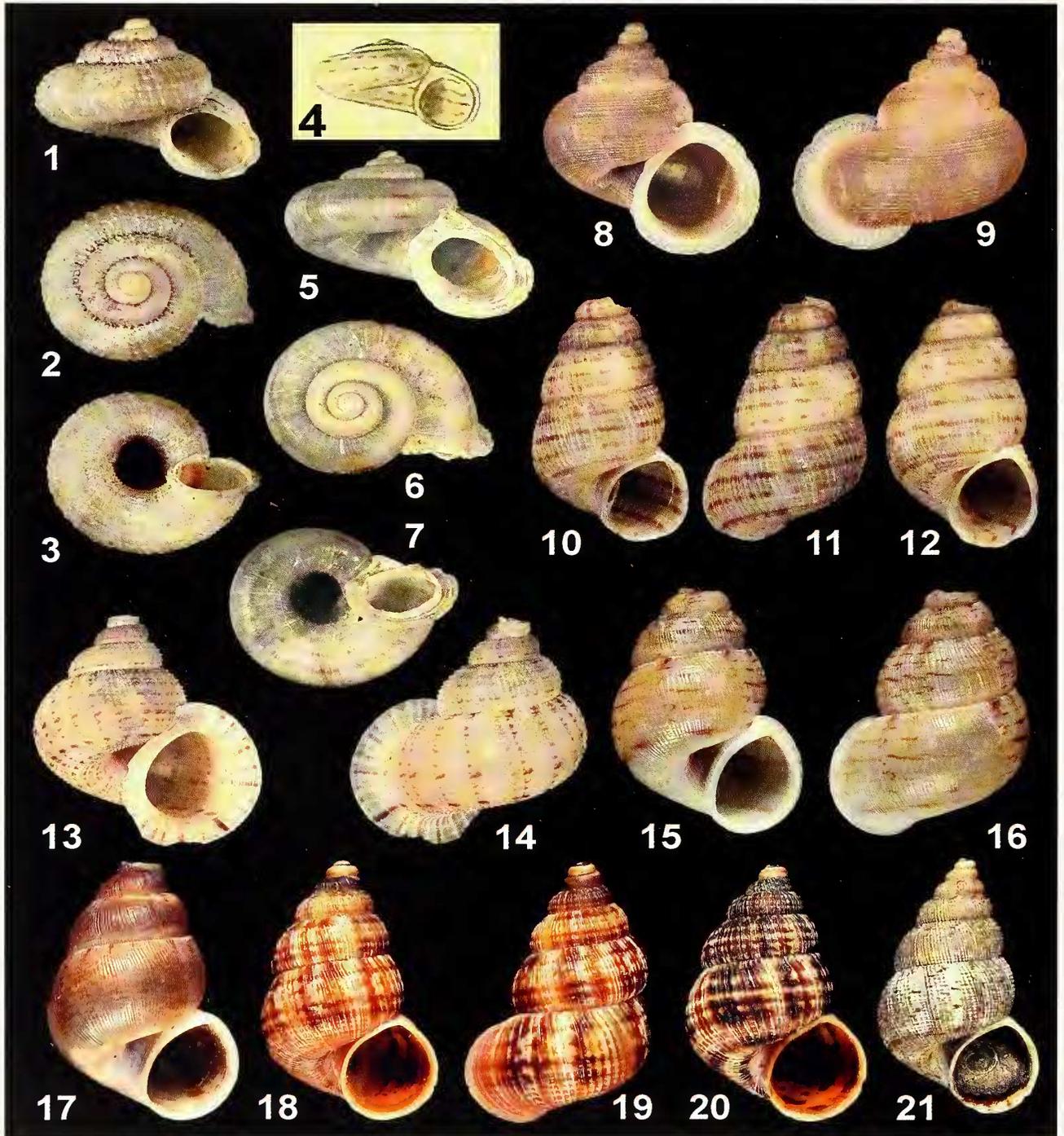
Genus *Abbottella* Henderson and Bartsch, 1921

Subgenus *Abbottella* Henderson and Bartsch, 1921

Type Species: *Chondropoma moreletianum* Crosse, 1873, by original designation.

Abbottella (*Abbottella*) *urbana* new species
(Figures 1–3)

Description (2 specimens): Shell ca. 5 mm in length, turbinoid, umbilicus wide (holotype 35% of maximum width), circular, open to apex. Nuclear whorls 1½, scarcely demarcated from teleoconch, smooth, minute and erect.



Figures 1–21. *Abbottella*, *Leiabbottella*, and *Chondropoma* species. **1–3.** *Abbottella* (*Abbottella*) *urbana* new species. Holotype, UF 446061, 4.9 mm. **4–7.** *Leiabbottella soluta* (Pfeiffer, 1852). **4.** Illustration from Pfeiffer (1854b: pl. 39, fig. 8). **5–7.** UF 249105, 2 km N of Majagual, Monte Plata Province, Dominican Republic, 11.3 mm width. **8–9.** *Chondropoma* (*Chondropoma*) *crystallinum* new species. Holotype, UF 446062, 15.0 mm. **10–12.** *Chondropoma* (*Chondropoma*) *duffylooksorum* new species. **10–11.** Holotype, UF 446063, 9.3 mm. **12.** Paratype, OSUM 36510, 8.5 mm. **13–14.** *Chondropoma* (*Chondropoma*) *maniense* Bartsch, 1946. GTW 7167b, 13 km NNE of Pedernales, Pedernales Province, Dominican Republic, 13 mm. **15–17.** *Chondropoma* (*Chondropoma*) *quisquense* Bartsch, 1946. **15–16.** GTW 7082b, 3–4 km NW of Oviedo, Pedernales Province, Dominican Republic, 14.0 mm. **17.** GTW 7082c, 10 km NW of Oviedo on Highway 44, Pedernales Province, Dominican Republic, 13.8 mm. **18–20.** *Chondropoma* (*Chondropoma*) *vanattae polychroma* new subspecies. **18–19.** Holotype, UF 446064, 11.4 mm. **20.** Paratype, OSUM 36511, 10 km ENE of Las Mercedes, Pedernales Province, Dominican Republic, 12.2 mm. **21.** *Chondropoma* (*Chondropoma*) *vanattae vanattae* Pilsbry, 1933. GTW 7090a, Polo, Barahona Province, Dominican Republic, 13.5 mm.

Teleoconch of 3 1/4 whorls, adnate, last 1/8 whorl scarcely deflected anteriorly. Suture impressed. Peristome double, circular (holotype 1.9 mm inner peristome diameter; 2.5 mm outer peristome diameter). Outer lip thin, lamellate, evenly but narrowly expanded with a barely perceptible auricle, lip deflected abaperturally. Inner lip exerted, thick, short. Spiral sculpture of numerous, weak spiral threads (ca. 24 on final whorl), stronger and more widely spaced in umbilicus, weakest on final whorl. Axial sculpture of widely spaced threads and thicker ribs, ca. 70 on final whorl. Intersections of spiral and axial sculpture form minute pustules, somewhat stronger on spire. Axial sculpture forms weak cusps at suture. Shell dirty white with ca. 7 faint, tan narrow bands. Outer lip white with faint bands, which are apparent on both sides of lip. Operculum, anatomy, and radula unknown.

Holotype: UF 446061.

Type Locality: Parque Central, off José Contreras Blvd., N of the Loteria suburb of western Santo Domingo, Distrito Nacional, Dominican Republic, 18.44° N, -69.97° W.

Paratype: OSUM 36509, from the type locality (1 specimen).

Distribution: Lowlands just west of Santo Domingo, Dominican Republic.

Habitat: Limestone slabs.

Comparison with Other Species: Only one other species has presumably been found in the vicinity of Santo Domingo, *Abbottella moreletiana domingoensis* Bartsch, 1946. That taxon differs from *A. urbana* in its much larger adult size (ca. 12 mm diameter vs. ca. 6 mm for *A. urbana*), in having a much wider outer lip, and in having coarser sculpture (ca. 60 axial ribs vs. ca. 70 in *A. urbana*). *Abbottella urbana* is similar to *Abbottella moreletiana gabriella* Bartsch, 1946, but is even smaller (ca. 8.6 mm diameter for *A. m. gabriella*), has more numerous axial ribs (53 in *A. m. gabriella*), and has more spiral threads (ca. 24 in *A. urbana* vs. 17 in *A. m. gabriella*). Additionally, *Abbottella moreletiana gabriella* is only known from Isla San Gabriel in Samaná Bay in the easternmost part of the island.

Etymology: *L. urbanus*, of the city, in reference to the type locality of the species.

Genus *Leiabbottella* Watters, 2010

Type Species: *Leiabbottella galaxius* Watters, 2010, by original designation.

***Leiabbottella solutus* (Pfeiffer, 1852)**
(Figures 4–7)

Choanopoma solutum “Richard” Pfeiffer, 1852: 167.

Cyclostoma solutum (Pfeiffer, 1852). Pfeiffer, 1854b: 295, pl. 39, figs. 8–10.

Abbottella solutum (Pfeiffer, 1852). Henderson and Bartsch, 1921: 75.

Incertipoma solutum (Pfeiffer, 1852). Bartsch, 1946: 171, 173–174, pl. 30, figs. 2–4.

Rolleia? *soluta* (Pfeiffer, 1852). Watters, 2006: 93, 487–488.

Leiabbottella solutus (Pfeiffer, 1852). Watters, 2010: 17–18.

Distribution: Described from the “Island of Santo Domingo” Bartsch (1946) had no examples beyond Pfeiffer’s description and illustration and he seemed to hint that he believed the locality was spurious. However, specimens (UF 249105) have since been collected at 150 m, southern edge of Los Haitises Mountains, N of Majagual, ca. 12 km NW of Sabana Grande de Boyá, Monte Plata Province, Dominican Republic. Specimens were collected in a coffee grove at the base of a limestone ledge in leaf mulch and under rocks (F.G. Thompson, UF, pers. comm., January, 2011). The type locality of *Choanopoma solutum* Pfeiffer, 1852 is herein restricted to 150 m, southern edge of Los Haitises Mountains, N of Majagual, ca. 12 km NW of Sabana Grande de Boyá, Monte Plata Province, Dominican Republic, 19.05° N, -69.83° W.

Subfamily Chondropomatinae Henderson and Bartsch, 1921

Genus *Chondropoma* (*Chondropoma*) Pfeiffer, 1847

Subgenus *Chondropoma* Pfeiffer, 1847

Type Species: *Cyclostoma sagra* d’Orbigny, 1842, by subsequent designation of Petit de la Saussaye, 1850.

***Chondropoma* (*Chondropoma*) *crystallinum* new species**
(Figures 8, 9)

Description (Holotype): Shell 15.0 mm maximum length, including peristome × 13.2 mm maximum width, including peristome, fragile, translucent, turbinata, umbilicus moderately wide (20% of maximum width). Protoconch whorls present in adult, 1½ whorls, not demarcated from teleoconch, smooth, minute but erect, with a diffuse brown peripheral band. Teleoconch of 4 whorls, adnate. Suture deeply impressed. Peristome double, oval (6.2 mm diameter maximum inner aperture height × 5.3 mm diameter maximum inner aperture width; 8.8 mm diameter maximum outer peristome height × 7.3 mm diameter maximum outer peristome width). Outer lip thin, expanded perpendicular to whorl, nearly evenly produced around peristome, adnate, lacking an auricle. Inner lip barely exerted, simple. Spiral sculpture present as sharp, narrow threads, weakest at periphery, ca. 39 on final whorl including umbilicus. Axial sculpture present only as numerous, minute beads on spiral threads. Suture with minute denticles. Teleoconch of faint bronze color, with 3 faint rows of narrow, widely spaced bands of darker spots at, just above, and below midline, most prominent on earlier whorls; umbilicus brown. Outer lip of peristome and portion of final whorl immediately before lip are white, unpatterned. Inner peristome bronze. Operculum, anatomy, and radula unknown.

Holotype: UF 446062.

Type Locality: 22 km N of Pedernales, off road HH to Agua Negra, at 460 m, Pedernales Province, Barahona Peninsula, Dominican Republic, in cleared field on southern slope of the Sierra de Baoruco. 18.10° N, -71.64° W.

Distribution: Known only from the type locality.

Habitat: This species was found with live and dead individuals of *Chondropoma manielense* Bartsch, 1946 and *Articulipoma rhodei* new species in a cleared field of rocks with little top soil.

Comparison with Other Species: This remarkable species is unlike any other Hispaniolan *Chondropoma*. The combination of large size, translucent shell, and nearly unicolored whorls with contrasting white peristome is unique. It is similar to *C. manielense*, with which it is found, in possessing the similar sculpture of spiral threads regularly produced into minute points; this sculpture is finer and less coarse in *C. crystallinum* than in *C. manielense*. In addition, *Chondropoma manielense* is smaller, more solid, and usually boldly patterned.

Etymology: *L. crystallinum*, of crystal, in reference to the glassy, translucent shell.

***Chondropoma (Chondropoma) duffyhooksorum*
new species**

(Figures 10–12)

Description (2 specimens): Shells 8.5–9.3 mm in length (holotype 9.3 mm maximum length decollate, including peristome × 4.8 mm maximum width, including peristome), high-spined, umbilicus narrow. Protoconch whorls decollate in all examples studied. Teleoconch of 4 whorls, solute just before peristome. Suture minutely channelled. Peristome double but fused to form a single lip, tear drop-shaped (holotype 3.0 mm diameter maximum inner aperture height × 2.7 mm diameter maximum inner aperture width). Outer lip thin, not expanded except for a minute auricle. Inner lip adherent to outer lip, simple. Spiral sculpture of ca. 25 narrow, low threads, widely spaced. Axial sculpture of irregularly spaced, narrow threads (ca. 58 on final whorl), produced into minute, vertical pustules at intersections with spiral threads. Suture serrate but without cusps or tufts. Teleoconch tan with 6 darker, interrupted spiral bands equally spaced from suture through umbilicus. Operculum thin, paucispiral with a fine granular deposit. Anatomy and radula unknown.

Holotype: UF 446063.

Type Locality: On an old house, Boca Chica, at nearly sea level, Santo Domingo Province, Dominican Republic, 18.46° N, -69.61° W.

Paratype: OSUM 35610, from the type locality (1 specimen).

Distribution: Known only from the type locality.

Comparison with Other Species: *Chondropoma duffyhooksorum* is related to *Chondropoma catalinense* Bartsch, 1946 from Isla Catalina off La Romana, ca. 64 km E of Boca Chica. *Chondropoma duffyhooksorum* differs in being smaller (ca. 9 vs. ca. 12 mm in length), in the more pronounced spiral sculpture, in the nearly completely adnate final whorl (solute for 1/6th of the final whorl in *C. catalinense*), and in the better defined and continuous brown spiral bands. No similar forms have been found between Isla Catalina and Boca Chica.

The specimens also greatly resemble the crude illustrations of *Cyclostoma dominicense* Pfeiffer, 1850 given by Pfeiffer in 1854b (pl. 38, figs. 9, 10). However, Watters (2006) placed that species in *Colonina* based on examination of the syntype lot (NHMUK 1996132) and synonymized *Haitipoma catalinense* Bartsch, 1946 with it. Thus *Chondropoma catalinense* Bartsch, 1946 and *Colonina dominicense* (Pfeiffer, 1850) are both endemic to Isla Catalina and are very similar in appearance but actually belong to different genera.

Etymology: Named for Glenn Duffy and Randy Hooks, who have generously contributed many annulariid specimens for study.

***Chondropoma (Chondropoma) manielense*
Bartsch, 1946**

(Figures 13, 14)

Chondropoma (Chondropoma) manielense manielense Bartsch, 1946: 53, pl. 10, fig. 3.

Chondropoma (Chondropoma) manielense montivagum Bartsch, 1946: 53, pl. 10, fig. 2.

Discussion: Bartsch (1946) described two subspecies based on differences in size and degree of coloration; both subspecies originated from the region of Manuel Viejo in the Barahona Peninsula. While variously known as Maniel Viejo to Bartsch and appearing as such on some current maps, the official name is Manuel Viejo. In the several collections reported here (GTW 7167a–d) adult specimens from the same locality range in size from 10 to 15 mm maximum length and vary from darkly colored to nearly white. There is no reason to maintain these two taxa as distinct and the subspecies *C. (C.) manielense montivagum* Bartsch, 1946 is herein synonymized with the nominal subspecies. It is curious to note that some specimens have a single peristome whereas others have a double peristome.

The records here extend the range of this species to the southern slope of the Sierra de Baoruco north of Pedernales, where it occurs under rocks in fields and in outcrops at 500–700 m. The overall range appears to be the southern slopes of the Sierra de Baoruco across the entire Barahona Peninsula.

***Chondropoma (Chondropoma) quisquense*
Bartsch, 1946**

(Figures 15–17)

Chondropoma (Chondropoma) quisquense quisquense Bartsch, 1946: 61, pl. 11, fig. 1.

Chondropoma (Chondropoma) quisquense sculptior Bartsch, 1946: 61–62, pl. 11, fig. 2.

Discussion: Bartsch (1946) described *C. quisquense* from Trujin and *C. quisquense sculptior* from Manuel Viejo, both in the southeastern portion of the Barahona Peninsula. Recent collections from the Oviedo region (near Bartsch's Trujin, GTW 7082b) and Manuel Golla (15 km W of Oviedo, GTW 7082c) indicate that this species occurs in the lowlands around the southeastern edge of the Sierra de Baoruco. Specimens were found in fields with large hardwood trees. Bartsch differentiated the two subspecies based on the degree to which the final whorl was solute and the strength of the sculpture. The new collections reported here include both subspecies within a single lot as well as intergrades. Therefore these two taxa are not considered distinct and *C. (C.) quisquense sculptior* Bartsch, 1946 is herein synonymized with the nominal subspecies.

Chondropoma (Chondropoma) vanattae sensu lato Pilsbry, 1933

Chondropoma vanattae Pilsbry, 1933: 124, pl. 6, figs. 8, 9.

Chondropoma (Chondropoma) vanattae Pilsbry, 1933. Bartsch, 1946: 52, 70–71, pl. 12, fig. 3.

This species breaks up into three subspecies across the Chaîne de la Selle mountain range, from east to west: *C. vanattae vanattae* Pilsbry, 1933 in the extreme eastern part of the Sierra de Baoruco; *C. vanattae polychroma* new subspecies on the southern slope of the western Sierra de Baoruco; and *C. vanattae verettense* Bartsch, 1946 from the Fonds-Verette region of the Massif de la Selle in Haiti.

Chondropoma (Chondropoma) vanattae polychroma new subspecies (Figures 18–20)

Description (4 specimens): Shell 11.4–12.3 mm in length (holotype 11.4 mm maximum length, including peristome \times 6.8 mm maximum width, including peristome), solid, eonic, umbilicus narrow (holotype 7% of maximum width). Protoconch whorls retained in adults, 1½ whorls, scarcely demarcated from teleoconch, smooth, minute but erect, a diffuse brown band at periphery and a darker band at suture. Teleoconch of 4 whorls, solute just before peristome. Suture impressed but not channeled. Peristome single, tear drop-shaped (holotype 4.0 mm diameter maximum inner aperture height \times 3.2 mm diameter maximum inner aperture width), narrow, barely expanded, lacking an auricle but posterior edge of lip forming 90° angle, inner lip just touching previous whorl. Spiral sculpture of irregularly spaced low cords of various widths, ea. 25 on final whorl, cords absent immediately below suture. Axial sculpture of irregularly spaced, wide, rounded cords of various widths with occa-

sional fine threads in between (ca. 70 cords on final whorl). Intersections of axial and spiral sculpture barely produced into pustules, strongest on spire. Sculpture has texture of coarse cloth. Suture serrate but lacks cusps or tufts. Teleoconch with a light tan base with irregular dark brown blotches arranged in loose axial and spiral bands. Final 1/8th of final whorl with a pinkish hue. Inside of peristome orange. Operculum thin, paucispiral with a fine granular deposit. Anatomy and radula unknown.

Holotype: UF 446064.

Type Locality: 9 km NE of Las Mercedes, Pedernales Province, Dominican Republic, at 1000 m on trees in pine forest, 18.12° N, –71.57° W.

Paratypes: BMSM 17944 (1 specimen); OSUM 36511 (1 specimen); NHMUK 20110335 (1 specimen). All paratypes from 10 km NE of Las Mercedes, Pedernales Province, Dominican Republic, at 1300 m in pine forest, 18.13° N, –71.56° W.

Distribution: *Chondropoma vanattae polychroma* is known from 9–10 km NE of Las Mercedes at 1000–1300 m. *Chondropoma vanattae vanattae* Pilsbry, 1933 was described from “Station 85, Sr. Del Monte’s plantation,” which was in a “verdant gully. . . 5–6 miles west of Barahona as the crow flies” at 1000 m. Bartsch (1946) added records from 3 km N of Manuel Viejo at 1000 m. The specimen of *C. vanattae vanattae* illustrated here (Figure 21, GTW 7090a) is from Polo at 610 m. *Chondropoma vanattae verettense* Bartsch, 1946, was described from Fonds-Verette, Haiti, at ca. 800 m. As a whole, this species occurs in the Chaîne de la Selle mountain range from ca. 600–1300 m but intergrades are not known between the subspecies.

Habitat: On trees in pine forests at ea. 1000–1300 m.

Comparison with Other Species: *Chondropoma vanattae polychroma* differs from other subspecies of *C. vanattae* in its coarser sculpture, more vivid coloration, and in particular its orange aperture.

Etymology: Gr. *poly*, many + Gr. *chroma*, color, many colored, in reference to the colorful appearance of the shell.

Genus *Chondropoma* Bartsch, 1946

Subgenus *Wetmorepoma* Bartsch, 1946

Type Species: *Chondropoma (Wetmorepoma) wetmorei* Bartsch, 1946, by original designation.

Discussion: This subgenus was based on a single species, *Chondropoma wetmorei* Bartsch, 1946 from Isla Beata off the southern tip of the Barahona Peninsula. Watters and Duffy (2010a) added *C. (W.) oculus* from the Cabo Rojo/Pedernales area of the western peninsula. A third species is described here from E of Cabo Rojo westward to Oviedo. The subgenus was created by Bartsch (1946) for elongate *Chondropoma* lacking any

spiral sculpture except in the umbilicus. This subgenus appears to be a true endemic of this peninsula occurring in the lowlands of the south and west, including Isla Beata. Further genetic research will probably show *Wetmorepoma* to be a subgenus of *Chondropomum* rather than *Chondropoma*.

***Chondropoma (Wetmorepoma) morsecodex* new species**
(Figures 22, 23)

Description (21 specimens): Shells 10.0–13.0 mm in length, decollate (holotype 13.0 mm maximum length, decollate, including peristome \times 6.0 mm maximum width, including peristome), translucent, high-spined, umbilicus narrow. Protoconch whorls decollate in all specimens examined. Teleoconch of 4 whorls, last 1/4th turn free from previous whorl. Suture sharply impressed. Peristome double, tear drop-shaped (holotype 3.6 mm diameter maximum inner aperture height \times 2.8 mm diameter maximum inner aperture width; holotype 4.9 mm diameter maximum outer peristome height, including auricle \times 4.3 mm diameter maximum outer peristome width). Outer lip thin, expanded perpendicular to whorl, narrowest facing umbilicus, widest anterior and medial, solute from previous whorls, minute auricle present. Inner lip barely exerted, simple. Spiral sculpture present only as two very feeble cords within umbilicus. Axial sculpture of very weak, wide, low ribs, nearly obsolete on most of shell, strongest on last 1/4 of final whorl. Suture smooth. Teleoconch glossy white with irregularly spaced axial bands of tan spots and dashes, four to a band; fused into a solid axial band in some specimens. Operculum paucispiral, corneous. Anatomy and radula unknown.

Holotype: UF 446065.

Type Locality: Ca. 9.3 km NW of Manuel Golla, ca. 140 m, off Highway 44, Pedernales Province, Barahona Peninsula, Dominican Republic, under rocks, 17.94° N, -71.65° W.

Paratypes: OSUM 36512 from the type locality (1 specimen); UF 249171, from 210 m, 17 km NW of Oviedo, Pedernales Province, Dominican Republic, 17.92° N, -71.51° W (15 specimens).

Other Material Examined: Jesús Santana Benítez coll., 13.5 km W of Oviedo, Pedernales Province, Dominican Republic (4 specimens).

Distribution: Lowland valley along Highway 44 from Oviedo to at least Mammel Golla, southern Barahona Peninsula.

Habitat: Specimens were found under rocks on a hill slope with limestone outcrops next to recently cleared agricultural land.

Comparison with Other Species: This is the third species described in this subgenus, all from the Barahona Peninsula. It differs from both *C. wetmorei*

(Figures 24, 25) and *C. oculum* (Figure 50) in being larger, having a wider peristome, and having a distinct pattern of dark brown rectangular spots and dashes arranged in irregularly spaced axial bands, occasionally as a single unbroken band (*C. wetmorei* has large, bold, round spots, *C. oculum* has smaller, fainter spots).

Etymology: Morse + L. *codex*, writing, Morse code, in reference to the linear series of dots and dashes on the shell (on the holotype, from anterior to posterior, dot, dot, dot, dash = "V"). A noun in apposition.

Genus ***Parachondria* Dall, 1905**

Subgenus ***Parachondria* Dall, 1905**

Type Species: *Turbo fascia* Wood, 1828, by original designation.

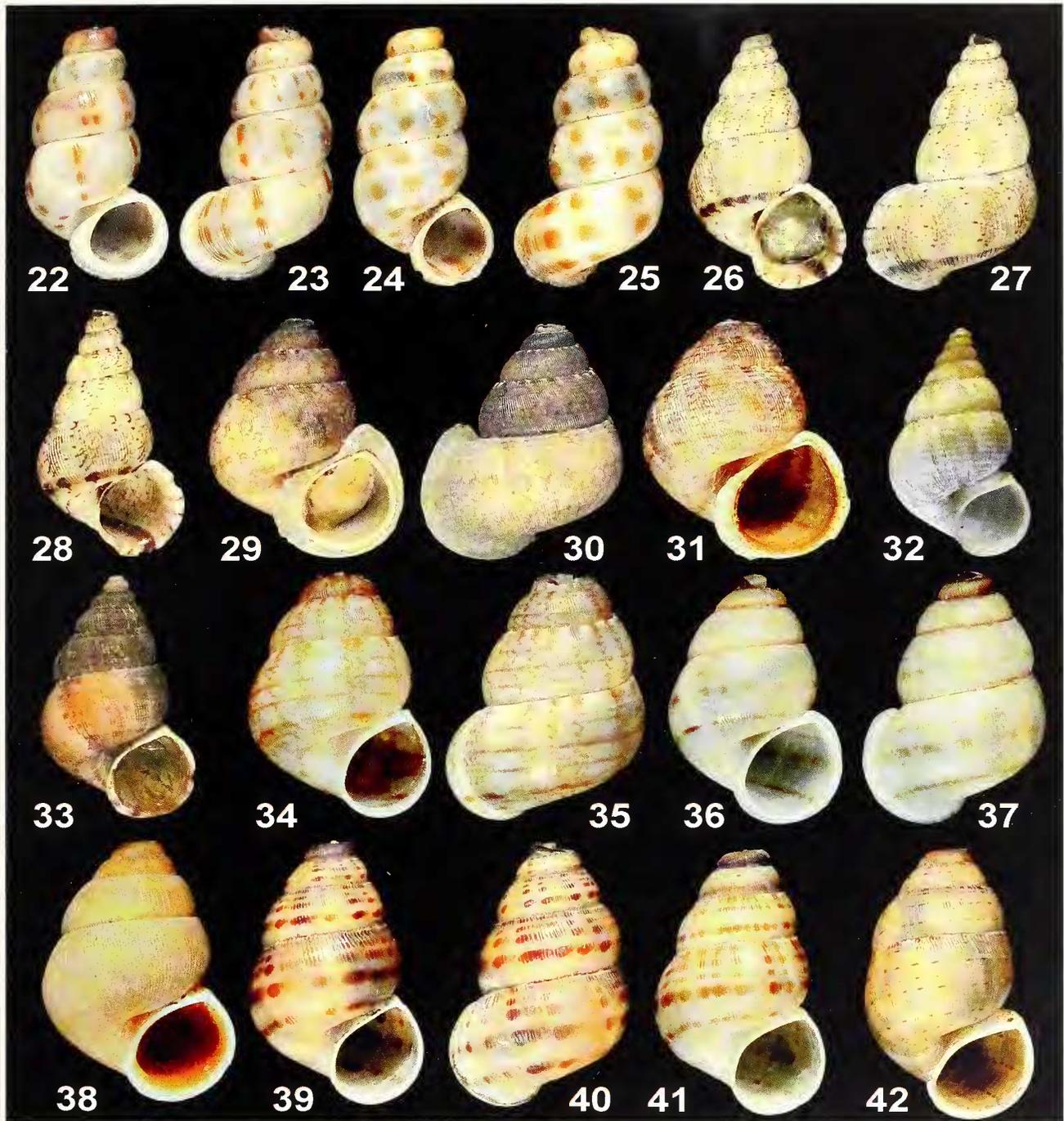
***Parachondria (Parachondria) gettlemani* new species**
(Figures 26–28, 58)

Description (7 specimens): Shell 13.9–14.6 mm in length (holotype 13.9 mm maximum length including peristome, decollate \times 7.7 mm maximum width including peristome), solid, high-spined, umbilicus narrow (holotype 8% of maximum width). Protoconch whorls decollate in some adult specimens, retained in others, 1½ whorls, scarcely demarcated from teleoconch, smooth, minute but erect, white. Teleoconch of 5 whorls, adnate except for just behind peristome. Suture minutely channeled. Peristome single, tear drop-shaped (holotype 4.8 mm diameter maximum inner aperture height \times 3.5 mm diameter maximum inner aperture width; holotype 6.0 mm diameter maximum outer peristome height, including auricle \times 4.6 mm diameter maximum outer peristome width). Lip thin, expanded perpendicular to whorl, narrowest facing umbilicus, barely adnate to previous whorls. Small triangular auricle. Spiral sculpture present only as 2 barely perceptible cords within umbilicus. Axial sculpture of regularly spaced, narrow threads (ca. 90 on final whorl), interstices smooth. Suture broken by axial lamella as minute cusps, groups of 3–6 cusps slightly larger. Teleoconch tan with or without a pattern of small spots and fine zigzag tan markings that may coalesce to form vague, narrow bands; all specimens seen have a wide brown basal band composed of blurred, dark brown spots; there may be narrow bands between this basal band and umbilicus; wide brown band deep within umbilicus; pseudotufts white. Operculum thin, paucispiral with a granular deposit. Anatomy and radula unknown.

Holotype: UF 446066.

Type Locality: Virgen de San Rafael, ca. 200 m, ca. 7 km NNE of Paraíso, Barahona Province, Barahona Peninsula, Dominican Republic, on trees, 18.05° N, -71.12° W.

Paratypes: BMSM 17945 (1 specimen); UF 446067, juvenile (1 specimen), OSUM 36514, juveniles (2 specimens);



Figures 22–42. *Chondropoma*, *Parachondria*, *Articulipoma*, and *Chondropomium* species. **22–23.** *Chondropoma* (*Wetmorepoma*) *morscodex* new species. Holotype, UF 446065, 13.0 mm. **24–25.** *Chondropoma* (*Wetmorepoma*) *wetmorci* Bartsch, 1946. GTW 7161a, Isla Beata, Pedernales Province, Dominican Republic, 11.3 mm. **26–28.** *Parachondria* (*Parachondria*) *gottlemanni* new species. **26–27.** Holotype, UF 446066, 13.9 mm. **28.** Paratype, NHMUK 20110336, 14.3 mm, from type locality. **29–31.** *Articulipoma* *rhodei* new species. **29–30.** Holotype, UF 446068, 17.0 mm. **31.** Paratype, OSUM 36515, 15–20 km NE of Cabo Rojo, Pedernales Province, Dominican Republic, 14.5 mm. **32–33.** *Articulipoma* *lowcanum* (Pfeiffer, 1852). **32.** Syntype, NHMUK 42/10, “St. Domingo,” 17 mm. **33.** UF 249153, W slope of Loma del Aguacate, Sierra Martín Gracia, Barahona Peninsula, Dominican Republic, 14.8 mm. **34–35.** *Chondropomium* *blancorum* new species. Holotype, UF 446070, 13.0 mm. **36–37.** *Chondropomium* *cusarcum* *saonaense* new subspecies. Holotype, UF 446071, 13.2 mm. **38.** *Chondropomium* *cusarcum* *catalinitense* (Bartsch, 1946). GTW 7464a, Isla Catalinita, Dominican Republic, 12.2 mm. **39–41.** *Chondropomium* *lynx* new species. **39–40.** Holotype, UF 446072, 19.6 mm. **41.** Paratype, OSUM 36519, Playa Los Patos, Barahona Province, Dominican Republic, 19.0 mm. **42.** *Chondropomium* *swiftii* *weinlandi* (Pfeiffer, 1862). GTW 7087c, 14 km N of Barahona, Barahona Province, Dominican Republic, 20.7 mm.

NHMUK 20110336, adult (1 specimen); all from the type locality; OSUM 36513, from 15 km S of Barahona, Barahona Province, Barahona Peninsula, Dominican Republic, on trees, 18.08° N, -71.08° W. Adult (1 specimen).

Distribution: Known only from the area from La Cienaga to Paraíso, in the narrow coastal plain between the mountains and the sea in the eastern Barahona Peninsula.

Habitat: On trees and rock fences; some specimens were found near a waterfall (Figure 58).

Comparison with Other Species: *Parachondria gettlemani* differs from *P. kazikus* (Bartsch, 1946) and *P. lindenianus* sensu lato (Weinland, 1880) in lacking any spiral sculpture outside of the umbilicus and in the presence of false tufts. *Parachondria kazikus* was described from "Dominican Republic" but has not been further localized. *Parachondria lindenianus* has a narrow range on the Massif de la Selle from Port-au-Prince to Fonds-Verette, Haiti. *Parachondria gettlemani* is only known from the area of La Cienaga, specifically Virgen de San Rafael, ca. 15 km south of Barahona, on the eastern coast of the Barahona Peninsula of the Dominican Republic.

This new species resembles members of Bartsch's (1946) *Lindenipoma*, which was synonymized with *Parachondria* by Watters (2006). This species is a good example of the reasoning behind that action. *Lindenipoma* was described by a small suite of features including the presence of spiral threads over the whorls. *Parachondria gettlemani* has all of the characteristics of *Lindenipoma* but lacks spiral sculpture except for a few cords within the umbilicus. Bartsch (1946) further noted that *Lindenipoma* lacked false tufting on the suture, which *P. gettlemani* possesses. It was this patch-work and inconsistent assortment of features that Bartsch used to delimit some of his taxa that resulted in their synonymy and inclusion into more broadly defined genera by Watters (2006).

Etymology: Named for Alan Gettleman of Merritt Island, Florida, tireless and generous collector of land snails, who collected part of the type lot.

Subfamily Tndorinae Watters, 2006

Genus *Articulipoma* Bartsch, 1946

Type Species: *Chondropoma (Articulipoma) caroli* Bartsch, 1946, by original designation.

Discussion: Watters (2006) raised *Articulipoma* to generic status. Species occur from the Chaîne de la Selle mountain range, including the Sierra de Baoruco in the Dominican Republic, east almost to Punta Salinas. They are characterized by axial lamellae that have an undulating or scalloped aspect. Most *Articulipoma* species are quite rare in collections.

***Articulipoma rhodei* new species**
(Figures 29–31)

Description (11 specimens): Shells 13.0–17.0 mm in length, decollate (holotype 17.0 mm maximum length, decollate, including peristome × 11.7 mm maximum width, including peristome), translucent, ovate-conic, umbilicus moderately narrow (holotype 13% of maximum width), partially covered by inner margin of outer lip. Protoconch whorls decollate in adults, 1½ whorls, scarcely demarcated from teleoconch, smooth, minute but prominent, a diffuse, brown, peripheral band may be present. Teleoconch of 4 whorls, last 1/4th turn free from previous whorl. Suture impressed and minutely channeled. Peristome double, tear drop-shaped (holotype 6.8 mm diameter maximum inner aperture height × 5.2 mm diameter maximum inner aperture width; holotype 9.8 mm diameter maximum outer peristome height, including auricle × 8.2 mm diameter maximum outer peristome width). Outer lip thin, expanded perpendicular to whorl, widest facing umbilicus, which it partially covers, solute from previous whorls in holotype but adnate in other examples. Prominent triangular auricle and wide inner portion of outer lip reflected forward, cup-like. Inner lip somewhat exerted, simple, prominent. Spiral sculpture present only as faint, wide undulations of axial threads, strongest near suture, present as 4–5 barely perceptible cords within umbilicus. Axial sculpture of regularly spaced, narrow threads (ca. 190 on final whorl), interstices smooth, having a wavy or scalloped appearance. Suture broken by axial lamella as minute cusps. Every 6–10 small cusps are followed by 3–4 enlarged but unfused cusps. Teleoconch silky in texture, bronze, purplish, tan, or orange with or without a pattern of fine zigzag tan markings that may coalesce to form bands. Suture brown with white pseudotufts. Operculum thin, paucispiral with a granular deposit. Anatomy and radula unknown.

Holotype: UF 446068.

Type Locality: 15 km NNE of Pedernales, on road to Agua Negra, Pedernales Province, Barahona Peninsula, Dominican Republic, on moist limestone cliff on the southern slope of the Sierra de Baoruco. 18.10° N, -71.64° W.

Paratypes: OSUM 36515, 15–20 km NE of Cabo Rojo, off Road HH (2 specimens), ca. 18.09° N, -71.72° W; BMSM 17946, 13 km NNE of Pedernales, on road to Agua Negra. 18.15° N, -71.70° W (2 specimens); NHMUK 20110337, 13 km NNE of Pedernales, on road to Agua Negra. 18.15° N, -71.70° W (2 specimens); UF 446069, 9.5 km NNE of Pedernales, on road to Agua Negra. 18.12° N, -71.72° W (4 specimens).

Distribution: Known from several localities on the southern slope of the Sierra de Baoruco N of Pedernales, Pedernales Province, Dominican Republic.

Habitat: Associated with limestone outcrops. Specimens have been found to ca. 1000 m. Dead specimens have been found in cleared land adjacent to agricultural fields.

Comparison with Other Species: *Articulipoma rhodei* is most similar to *A. caroli* (Bartsch, 1946), but differs in being more rotund, more compact, and generally larger (13–17 mm in length in *A. rhodei*, 11–13 mm in *A. caroli*). *Articulipoma caroli* occurs in a narrow range on the northern side of the Massif de la Selle from Croix des Bouquets to Bodarie, Haiti. *Articulipoma rhodei* is only known from the region ca. 10–15 km north of Pedernales on the southern side of the Sierra de Baoruco, Dominican Republic. *Articulipoma woodringi* Bartsch, 1946 differs from *A. rhodei* in lacking the pronounced auricle and in having a very narrowly expanded peristome on the inner lip (in contrast this is the widest portion in *A. rhodei*). *Articulipoma rhodei* occurs in association with *Chondropoma maneilense* Bartsch, 1946 and *Chondropoma crystallinum* new species.

Etymology: Named for Homer Rhode of Englewood, Florida, accomplished collector of land snails for nearly 60 years (he accompanied such luminaries as Archie Jones and Edmund Winte), who collected portions of the type lot of this species.

***Articulipoma loweanum* (Pfeiffer, 1852)**
(Figure 32, 33)

Chondropoma loweanum Pfeiffer, 1852: 281.
Cyclostoma loweanum (Pfeiffer, 1852). Pfeiffer, 1854c: pl. 47, figs. 15–16.
Chondropoma (*Chondropomium*) *loweanum* Pfeiffer, 1852. Henderson and Bartsch, 1921: 60.
Chondropoma (*Articulipoma*) *loweanum* (Pfeiffer, 1852). Bartsch, 1946: 40, 48–49, pl. 8, fig. 3.
Articulipoma loweanum (Pfeiffer, 1852). Watters, 2006: 58, 337.

Distribution: Described from “Haiti,” the label to the type (Figure 32, NHMUK 42/10) reads “St. Domingo.” Both localities refer to the island of Hispaniola rather than to a more specific place. Bartsch (1946) had no examples beyond a photo of the type. Specimens (UF 249153) have since been collected on the western slope of Loma del Aguacate at 850 m in the Sierra Martín Graeía E of the Barahona Peninsula, Barahona Province, Dominican Republic. The type locality of *Chondropoma loweanum* Pfeiffer, 1852 is herein restricted to Loma del Aguacate, Sierra Martín Graeía, Barahona Province, Dominican Republic, ca. 19.10° N, –71.37° W.

Genus ***Chondropomium* Henderson and Bartsch, 1921**

Type Species: *Chondropoma weinlandi* Pfeiffer, 1862, by original designation.

Discussion: As more material becomes available from the Barahona Peninsula the lines between *Chondropomium* and *Chondropoma* have become increasingly blurred.

Chondropomium was erected for *Chondropoma* that lacked spiral sculpture outside of the umbilical region. But the suite of “*Chondropomium*”-type features that has emerged based on additional material—typically large sized with a tear drop-shaped, narrowly expanded peristome; high spire; usually unfused sutural serrations; and undulating axial sculpture—is present in species, unknown to Henderson or Bartsch, with spiral sculpture. It is clear that a reorganization of species will be necessary in the future based on phylogenetic studies. For now it appears that *Chondropoma marmoreum* Watters and Duffy, 2010 may also be a member of *Chondropomium*. *Chondropomium hooksi* and *C. alyshae*, both Watters and Duffy (2010a), may belong to an unnamed genus, as suggested by Watters and Duffy (2010a).

***Chondropomium blaineorum* new species**
(Figures 34, 35)

Description (2 specimens): Shells ca. 13.0 mm in length, decollate (holotype 13.0 mm maximum length, decollate, including peristome × 8.8 mm maximum width, including peristome), solid, conic, umbilicus rather narrow (holotype 11% of maximum width). Protoconch whorls decollate in all specimens examined. Teleoconch of 3¼ whorls, final whorl solute for last 1/6th of whorl. Suture minutely channeled. Peristome single, tear drop-shaped (holotype, 5.1 mm diameter maximum inner aperture height × 3.5 mm diameter maximum inner aperture width). Outer lip narrow, not expanded, minute auricle present. Spiral sculpture present only as 7–8 very feeble cords within umbilicus. Axial sculpture of narrow, closely spaced, low ribs, nearly obsolete on final whorl, forming minute cusps at suture. Suture serrate. Teleoconch base color pale tan with narrow darker bands having zigzag markings between them axially arranged; umbilicus and peristome white. In paratype bands are wider and markings more diffuse. Operculum, anatomy, and radula unknown.

Holotype: UF 446070.

Type Locality: ca. 9.3 km NW of Manuel Golla, ca. 140 m, off Highway 44, Pedernales Province, Barahona Peninsula, Dominican Republic, under rocks. 17.94° N, –71.65° W.

Paratype: OSUM 36516, from the type locality (1 specimen).

Distribution: Known only from the type locality.

Habitat: Specimens were found under rocks on a hill slope with limestone outcrops next to recently cleared agricultural land. No live-taken specimens are known.

Etymology: Named for Matt and Dona Blaine, who helped collect the type lot.

Comparison with Other Species: This small species resembles *Chondropoma eusarcum* sensu lato (Pfeiffer, 1854), which on the southern coast is only known from Isla Catalinita and Isla Saona, some 300 km E of the range of *C. blaineorum*. The nominal subspecies, *C. eusarcum eusarcum*, has not been localized, but differs from *C. blaineorum* in having much coarser sculpture, particularly on the body whorl where sculpture is nearly absent in *C. blaineorum*, and in having a different color pattern.

***Chondropomium eusarcum* sensu lato (Pfeiffer, 1852)**

Chondropoma eusarcum Pfeiffer, 1852: 281.

Cyclostoma (Chondropoma) eusarcum (Pfeiffer, 1852). Pfeiffer, 1854a: 143.

Cyclostoma eusarcum (Pfeiffer, 1852). Pfeiffer, 1854c: pl. 48, figs. 1, 2.

Chondropoma (Chondropomium) eusarcum Pfeiffer, 1852. Henderson and Bartsch, 1921: 60.

Chondropomium eusarcum (Pfeiffer, 1852). Watters, 2006: 254.

***Chondropomium eusarcum saonaense* new subspecies**
(Figures 36, 37)

Description (2 specimens): Shells 13.2–14.1 mm in length, decollate (holotype 13.2 mm maximum length, decollate, including peristome \times 8.1 mm maximum width, including peristome), solid, conic, umbilicus rather narrow (holotype 13% of maximum width). Protoconch whorls decollate in all specimens examined. Teleoconch of 4 whorls, final whorl adnate. Suture minutely channeled. Peristome double but outer and inner lips fused to form a single lip, tear drop-shaped (holotype 5.5 mm diameter maximum inner aperture height \times 4.0 mm diameter maximum inner aperture width). Outer lip narrowly expanded, narrowest on inner margin, small, wide auricle present. Spiral sculpture present only as 4–5 very feeble cords within umbilicus. Axial sculpture of narrow, closely spaced, low ribs, nearly obsolete on final whorl, forming minute cusps at suture. Suture serrate. Teleoconch base color glossy white with three broken spiral bands, one above, one at, and one below periphery, composed of brown rectangular spots, nearly forming a continuous band at base; peristome white with bands showing through. Operculum thin, paucispiral with a fine granular deposit. Anatomy and radula unknown.

Holotype: UF 446071.

Type Locality: Northeastern Isla Saona, Dominican Republic, ca. 18.15° N, –68.60° W.

Paratype: OSUM 36517, from the type locality (1 specimen).

Distribution: Known only from the type locality.

Habitat: Specimens were found on a limestone cliff after rain.

Comparison with Other Species: *Chondropomium eusarcum saonaense* is somewhat similar to *Chondropomium eusarcum catalinitense* (Bartsch, 1946) (Figure 38), which occurs less than 4 km away on Isla Catalinita. *Chondropomium eusarcum catalinitense* is colored a uniform pinkish brown with only the faintest trace of color bands (*C. e. saonaense* is white with obvious bands), has an orange aperture (white in *C. e. saonaense*), and has axial ribs that are much narrower and more thread-like than those of *C. e. saonaense*.

Chondropomium eusarcum is among the smallest species of the genus. If the subspecies described by Bartsch (1946) truly are conspecific then it also has one of the widest and most fragmented ranges of any Hispaniolan annulariid. The nominal subspecies was described from “Santo Domingo” and has not been localized. *Chondropomium eusarcum puertoplatense* (Bartsch, 1946) from Puerto Plata is the only *Chondropomium* known from the northern half of the island. Described from Isla Catalinita, *Chondropomium eusarcum catalinitense* is found 280 km away on the southeastern end of Hispaniola (Watters (2006) speculated that Bartsch’s locality of Catalinita Island was an error for Catalina Island, however, Catalinita Island is a separate place). The subspecies described here is from Isla Saona, adjacent to Isla Catalinita. Genetic analysis may eventually determine that these four subspecies are not conspecific.

***Chondropomium lynx* new species**

(Figures 39–41, 58)

Description (3 specimens): Shells 19.1–19.6 mm in length, decollate (holotype 19.6 mm maximum length, decollate, including peristome \times 10.4 mm maximum width, including peristome), solid, high-spined conic, umbilicus rather narrow (holotype 11% of maximum width). Protoconch whorls decollate in all specimens examined. Teleoconch of 4 whorls, last 1/4th turn solute. Suture minutely channeled. Peristome single, tear drop-shaped (holotype 7.2 mm diameter maximum inner aperture height \times 5.0 mm diameter maximum inner aperture width). Outer lip narrow, solute from previous whorls, minute auricle present. Spiral sculpture present only as three very feeble cords within umbilicus. Axial sculpture of wide, closely spaced, low ribs, strongest on last 1/4 of final whorl, ea. 90 on final whorl, forming minute cusps at suture. Suture serrate. Teleoconch base color tan with five broken spiral bands, three above, one at, and one below periphery, composed of dark brown spots, blurred and repeated; first teleoconch whorl dark brown; peristome white. Operculum thin, paucispiral with a fine granular deposit. Anatomy and radula unknown.

Holotype: UF 446072.

Type Locality: Virgen de San Rafael, ca. 200 m, ca. 7 km NNE of Paraíso, Barahona Province, Barahona Peninsula, Dominican Republic, under rocks. 18.05° N, –71.12° W.

Paratypes: OSUM 36518, Playa Los Patos, just off Highway 44, Barahona Province, Dominican Republic, under limestone rocks. 17.96° N, -71.19° W (1 specimen); OSUM 36519, from the type locality (1 specimen).

Distribution: Known from a narrow coastal range from Virgen de San Rafael to Playa Los Patos, in the vicinity of Paraíso, Barahona Province, Dominican Republic.

Habitat: Under limestone rocks, one specimen found near a waterfall (Figure 58).

Comparison with Other Species: *Chondropomium lynx* is part of the large complex of *Chondropomium* species in the Barahona Peninsula. In its large size, sculpture, and color pattern it resembles some forms of *C. swiftii* (Figure 42). *Chondropomium swiftii* is a lowland species distributed between the Massif de la Selle to the south and the Sierra de Neiba to the north. *Chondropomium lynx* occurs to the SE in the narrow band of lowland between the ocean and the Sierra de Baoruco. It differs from *C. swiftii* in having a unique color pattern composed of spots that are overlaid and repeated slightly out of alignment. It superficially resembles *C. swiftii barahonense* (Bartsch, 1946) from ca. 25 km to the north but does not have the nearly flat-sided pupoid shape of the *C. swiftii* complex.

Etymology: *Lynx rufus*, the American bobcat or lynx; the shell has a similar color pattern. Used as a noun in apposition.

Genus *Crossepoma* Bartsch, 1946

Type species: *Cyclostoma emilianum* Weinland, 1862, by original designation.

Crossepoma vermiculatum sensu lato (Bartsch, 1946) new combination

Discussion: For whatever reason Bartsch (1946) rarely illustrated specimens with opercula although he always included an account of the operculum in the description of the species. Bartsch must not have had any specimens with opercula of his *Chondropoma vermiculatum vermiculatum* or any of the three other subspecies as he did not mention any opercula in the descriptions. He apparently relegated the species to *Chondropoma* (*Chondropomium*) based solely on shell features, a reasonable conclusion given the shell's characteristics. But examination of live-taken material (GTW 7088b) reveals an operculum consisting of a pseudolamellum that does not completely cover the basal, corneous portion—the hallmark of *Crossepoma*. Bartsch (1946: 72) defined a pseudolamellum as a “flat plate formed by the expansion and fusion of the retractively curved opercular riblets on the outer edge.” Although Bartsch (1946) considered sutural tufts a characteristic of *Crossepoma*, this feature

does not occur in all taxa (i.e., *C. emilianum insulanum* Bartsch, 1946) and it does not occur in *C. vermiculatum*. These taxa (*Chondropoma* (*Chondropomium*) *vermiculatum domingense*, *C. v. nubium*, *C. v. sallei*, and *C. v. vermiculatum*, all Bartsch, 1946) are herein allocated to *Crossepoma* Bartsch, 1946. This is the first species of *Crossepoma* to be found in the Dominican Republic. However, other Haitian species of *Crossepoma* occur in the Chaîne de la Selle mountain range, which continues into the Dominican Republic as the Sierra de Baoruco where *C. vermiculatum* is found. Other genera have the same distribution and this range extension is not unexpected.

Crossepoma vermiculatum sensu lato (Bartsch, 1946) ranges along the eastern Barahona Peninsula from Cabral south to Trujin, although two of the four subspecies were unlocalized in Bartsch's 1946 treatment. A locality for one of these two, *Crossepoma vermiculatum sallei* (Bartsch, 1946), is recorded below. This is the most eastern species of *Crossepoma*. It apparently inhabits lowlands.

Crossepoma vermiculatum vermiculatum (Bartsch, 1946) new combination

(Figures 43, 57)

Chondropoma (*Chondropomium*) *vermiculatum vermiculatum* Bartsch, 1946: 29-30, pl. 3, fig. 1.

Chondropomium vermiculatum vermiculatum (Bartsch, 1946). Watters, 2006: 63, 533.

Distribution: These examples (GTW 7088b) came from the area of Colonia Juancho off Highway 44, NE of Oviedo, at 30 m along an unpaved road lined with trees, fences, and occasional rocks, 17.85° N, -71.34° W. Some individuals were found on trees (Figure 57). This area is just north of the type locality of Trujin.

Crossepoma vermiculatum sallei (Bartsch, 1946) new combination

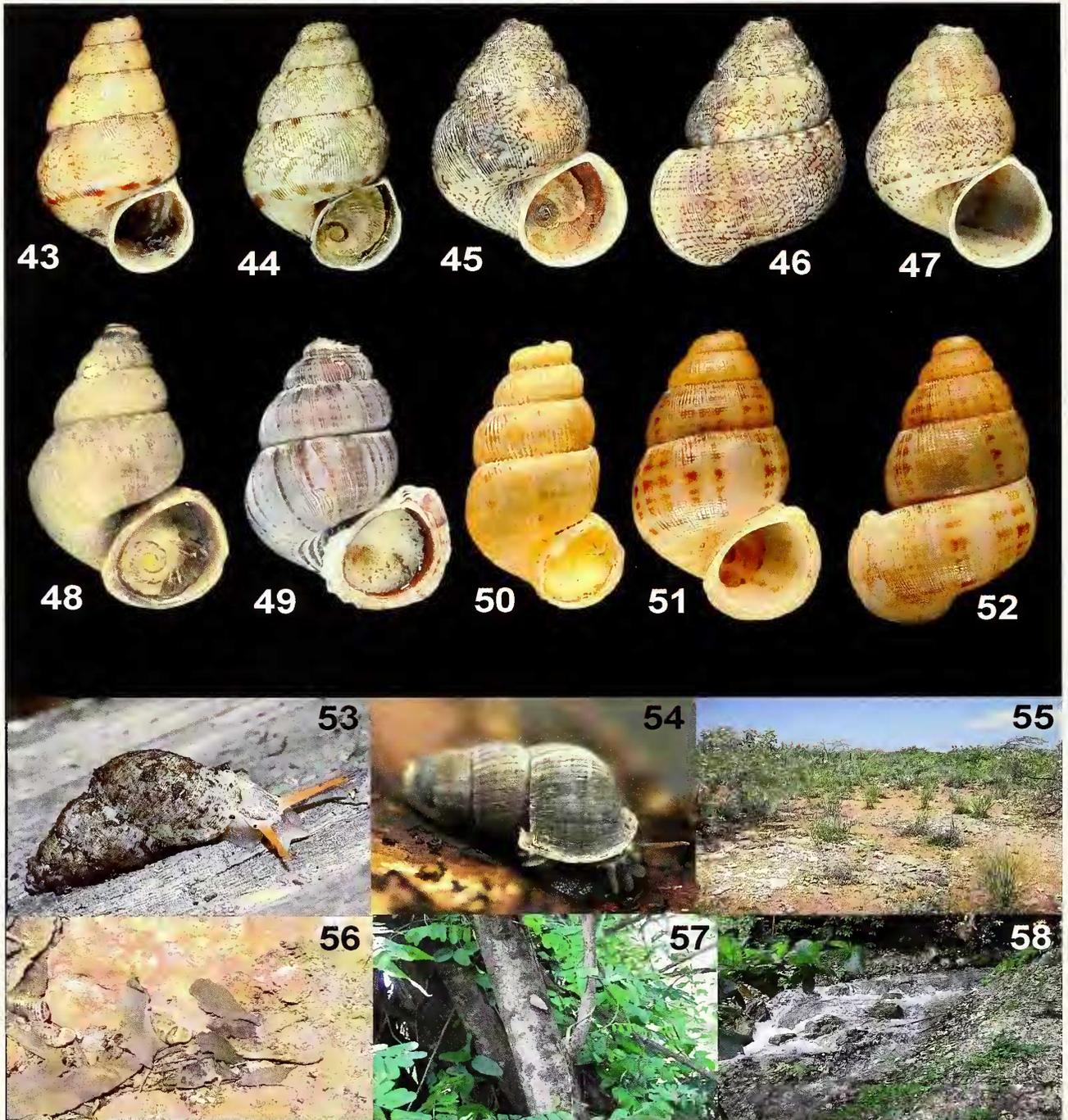
(Figure 44)

Chondropoma (*Chondropomium*) *vermiculatum sallei* Bartsch, 1946: 30, pl. 3, fig. 6.

Chondropomium vermiculatum sallei (Bartsch, 1946). Watters, 2006: 533.

Distribution: This subspecies was described from “Haiti” although Bartsch (1946) clearly did not believe that locality was correct. A specimen from Cabral (GTW 7088a), ca. 13 km WNW of Barahona, at ca. 40 m, matches the type of *C. vermiculatum sallei*. The type locality of *Chondropoma* (*Chondropomium*) *vermiculatum sallei* Bartsch, 1946 is herein restricted to Cabral, Barahona Province, Dominican Republic, ca. 18.25° N, -71.22° W. This is the northern-most subspecies.

Genus *Licina* Gray, 1847



Figures 43–58. *Crossepoma*, *Licina*, *Chondropomium*, and *Chondropoma* species and habitats. **43.** *Crossepoma vermiculatum vermiculatum* (Bartsch, 1946). GTW 7088b, 8 km NE of Oviedo, Pedernales Province, Dominican Republic, 15.0 mm. **44.** *Crossepoma vermiculatum sallei* (Bartsch, 1946). GTW 7088a, Cabral, Barahona Province, Dominican Republic, 18.6 mm. **45–47.** *Licina bartschi* new species. **45–46.** Holotype, UF 446073, 20.1 mm. **47.** Paratype, OSUM 36520, 20.6 mm, from type locality. **48, 53, 55.** *Chondropomium nobile* (Pfeiffer, 1852). GTW 7089b, Virgen de San Rafael, Barahona Province, Barahona Peninsula, 26.9 mm. **53.** Living animal from same locality. **55.** Habitat (photo courtesy of Alan Gettleman). **49, 54.** *Chondropomium pumilum* Watters and Duffy, 2010. GTW 7172b, 10 km NE of Las Mercedes, Pedernales Province, Dominican Republic, 19.9 mm. **54.** Living animal from same locality. **50.** *Chondropoma* (*Wetmorepoma*) *oculeum* Watters and Duffy, 2010. Holotype UF 420737, 9.0 mm. **51, 52, 56.** *Chondropoma marmoreum* Watters and Duffy, 2010. Holotype UF 420735, 18.3 mm. **56.** Habitat (photo courtesy of Alan Gettleman). **57.** Habitat of *Crossepoma vermiculatum vermiculatum* (Bartsch, 1946). Area of Colonia Juancho, NE of Oviedo, Pedernales Province, Dominican Republic (photo courtesy of Alan Gettleman). **58.** Habitat of *Parachondria gettlemani* new species and *Chondropomium lynx* new species, Virgen de San Rafael, Barahona Province, Dominican Republic (photo courtesy of Alan Gettleman).

Type Species: *Nerita labco* Müller, 1774, by original designation.

Discussion: Bartsch (1946) separated his genus *Kisslingia* from *Licina* based solely on the presence of a single peristome in the former and a double peristome in the latter. Based on the fact that among species in other genera (*Chondropoma*, for example), and occasionally even within species, taxa may have both single and double peristomes, Watters (2006) synonymized *Kisslingia* with *Licina*.

***Licina bartschi* new species**

(Figures 45–47)

Description (4 specimens): Shells 18.4–20.6 mm in length, decollate (holotype 20.1 mm maximum length, decollate, including peristome \times 12.7 mm maximum width, including peristome), solid, conic, umbilicus rather narrow (holotype 12% of maximum width). Protoconch whorls decollate in adults, consisting of 1½ smooth whorls, well-delimited from teleoconch. Teleoconch of 4 whorls, final whorl solute just before peristome. Suture deeply channeled. Peristome single, thick, tear drop-shaped (holotype 7.6 mm diameter maximum inner aperture height \times 5.5 mm diameter maximum inner aperture width). Outer lip narrow, barely expanded on outer side, auricle absent. Spiral sculpture present only as 3–5 very feeble cords below suture rendering axial sculpture scalloped, 7–9 cords in umbilicus. Axial sculpture of narrow, fine ribs separated by 2–3 times their width, ca. 150 on final whorl, forming minute cusps at suture. Suture serrate. Teleoconch base color glossy pale tan with a complex pattern of dense, brown, very fine, zigzag markings axially aligned, sometimes forming interrupted spiral bands on base and within umbilicus; growth rests marked by axial rows of tiny dark spots; suture with pattern of alternating white and dark brown patches; markings persist on both sides of peristome and are visible through inside of shell. Operculum paucispiral with a pseudolamella that extends 3/5ths of way to outer margin, corneous portion with a fine granular deposit. Anatomy and radula unknown.

Holotype: UF 446073.

Type Locality: 9.5 km ENE of Las Mercedes, Pedernales Province, Dominican Republic, on a mountain top at 1,300 m. 18.12° N, –71.57° W.

Paratypes: BMSM 17947, (1 specimen); OSUM 36520, (1 specimen); NHMUK 20110338, (1 specimen); all from the type locality.

Distribution: Known only from the type locality.

Habitat: In pine forest with large rock outcroppings.

Comparison with Other Species: *Licina bartschi* resembles other members of Bartsch's *Kisslingia* group

(those having a simple peristome), distributed from east to west: *Licina clenchi* (Pilsbry, 1933), *Licina baharuccensis* (Bartsch, 1946), *Licina polocensis* (Bartsch, 1946), *Licina bartschi*, and *Licina hinchensis* (Bartsch, 1946). *Licina clenchi* (Pilsbry, 1933) is known only from the Barahona area and most closely resembles *L. bartschi*, even though it is the most geographically distant (50 km) of the peninsular *Kisslingia* group. *Licina bartschi* differs in being slightly larger (18–20 vs. 15–18 mm in length), having a higher spire, having more rounded whorls, and possessing thinner and more widely separated axial ribs that have a scalloped or undulating appearance over the entire body whorl. *Licina baharuccensis* (Bartsch, 1946) occurs in the eastern half of the Barahona Peninsula in the Sierra de Baharuco. It is smaller, more ovate, more coarsely sculptured, and the last whorl is more solute than in *L. bartschi*. *Licina polocensis* (Bartsch, 1946) is known only from Polo, located in a valley in east central Barahona Peninsula. It is more broadly turbinate than *L. bartschi*, with a more circular aperture (teardrop-shaped in *L. bartschi*). *Licina hinchensis* (Bartsch, 1946) is from Basin Sin (Zim) near Hinche in the Massif du Nord of central Haiti and is probably not closely related to the remaining *Kisslingia*-like taxa in the Barahona Peninsula. It is more turbinate in outline than *L. bartschi* and has a spotted rather than vermiculated color pattern. No other member of the *Kisslingia* group has such an intricate color pattern as does *L. bartschi*.

Etymology: Named for Paul Bartsch (1871–1960) of the U.S. National Museum (now National Museum of Natural History, Smithsonian Institution), who wrote the definitive works on the Annulariidae (Torre and Bartsch, 1938, 1941; Bartsch, 1946), describing nearly 800 taxa. Often vilified as a splitter, his works were nevertheless Herculean, thorough, and professional. It is surprising and disappointing that only one taxon of this family to which he devoted so much of his time (*Annularella torrebartschi* Jaume, 1984), had ever been named to honor him.

ADDITIONAL RECORDS

***Chondropoma (Wetmorepoma) oculoenum* Watters and Duffy, 2010.** Originally described from 14.5 km N of Cabo Rojo, new records are from ca. 7 km S of the type locality (GTW 7166b, 7166c, Figure 50). This species seems to have a narrow range confined to the Pedernales/Cabo Rojo area on the west coast of the Barahona Peninsula.

***Chondropomium nobile* (Pfeiffer, 1852)** (Figures 48, 53, 55). One of the largest of the Annulariidae, this species was known from a few records from the coastal town of Paradis (? Paraíso), 26 km SSW of Barahona, and another record from 10 km S of Barahona. Records reported here are for Virgen de San Rafael, less than 7 km up the coast from Paraíso (GTW 7089b). Specimens were common at 200 m under rocks in dirt on

hillside crests in a scrub cactus area. It appears that this species has a very narrow range on the coastal eastern edge of the Sierra de Baoruco. A live individual is illustrated here (Figure 53).

***Chondropomium pumilum* Watters and Duffy, 2010** (Figures 49, 54). Described from 19–32 km N of Cabo Rojo, new records give a more precise locality at 10 km NE of Las Mercedes at 1,300 m in pine forests, 18.12° N, -71.56° W (GTW 7172b). It co-occurs with *Chondropoma vanattae polychroma* new subspecies.

***Chondropomium swiftii weinlandi* (Pfeiffer, 1862)**. This subspecies occupies a rather wide range in the xeric lowlands between the Massif de la Selle and the Sierra de Neiba, occurring from Thomazeau, Haiti, to Azua, Dominican Republic. One live example was found ca. 14 km N of Barahona at the base of the Sierra de Neiba at 37 m elevation under rocks and plant roots in xeric shrub (GTW 7087e, Figure 42). Other live-taken specimens have been found at Mella (GTW 7087a) and Fordi Negro (GTW 7087b).

***Chondropoma marmoreum* Watters and Duffy, 2010**. This species is now known from several sites along the foothills of the southern Sierra de Baharucu (GTW 7170e–f). It occurs under rocks in xeric areas where it is locally common (Figures 51, 52, 56).

***Leiabbottella galaxius* Watters, 2010**. Described from the Sierra de Samaná of the Samaná Peninsula, additional records extend its range westward along the north coast to at least Sosúa, Puerto Plata Province (UF 249107, 249112). This is a range extension of over 100 km and illustrates how poorly the annulariid fauna of the northern coast is known.

ACKNOWLEDGMENTS

I am grateful for the opportunity to study specimens from these new localities generously made possible by Matt and Dona Blaine, Glenn Duffy, Alan Gettleman, Randy Hooks, Homer Rhode, and Jesús Santana Benítez. Fred Thompson, John Slapeinsky, and Gustav Paulay graciously allowed me access to the UF collection. The manuscript was greatly improved by an anonymous reviewer.

LITERATURE CITED

- Bartsch, P. 1946. The operculate land mollusks of the family Annulariidae of the island of Hispaniola and the Bahama Archipelago. Bulletin of the U.S. National Museum 192: 264 pp., 38 pls.
- Dall, W.H. 1905. An arrangement of the American Cyclostomatidae, with a revision of the nomenclature. Proceedings of Malacological Society of London 6: 208–210.
- Gray, J.E. 1847. A list of the genera of Recent Mollusca, their synonyma and types. Proceedings of the Zoological Society for 1847 (15): 129–219.
- Henderson, J.B. and P. Bartsch. 1921. A classification of the American operculate land mollusks of the family Annulariidae. Proceedings of the United States National Museum 58 (2327): 49–82.
- Jaume, M.L. 1941. Rectificaciones a nombres de moluscos terrestres. Miscelanea Zoologica, Academia de Ciencias de Cuba (20): 1–4.
- Pfeiffer, L. 1847. Uebersicht aller bekannten Arten von Cyclostomaceen. Zeitschrift für Malakozoologie 4: 101–112.
- Pfeiffer, L. 1852. Monographia pneumonoporum viventium. T. Fischer, Cassellis, 435 pp.
- Pfeiffer, L. 1854a. Descriptions of twenty-four new species of land shells, collected by M. Sallé on the island of St. Domingo, from Mr. Cuming's collection. Proceedings of the Zoological Society for 1852 (20): 138–144, pl. 13.
- Pfeiffer, L. 1854b. Die gedeckelten Lungenschnecken. (Helicinacea et Cyclostomacea). Systematisches Conchylien-Cabinet von Martini und Chemnitz (Küster ed.). Part 19. Installment 133: pls. 37–42, pp. 269–308.
- Pfeiffer, L. 1854c. Die gedeckelten Lungenschnecken. (Helicinacea et Cyclostomacea). Systematisches Conchylien-Cabinet von Martini und Chemnitz (Küster ed.). Part 19. Installment 136: pls. 43–48, pp. 309–356.
- Pilsbry, H.A. 1933. Santo Domingo land mollusks collected by Samuel C. Pease, 1932, and by A. A. Olsson, 1916. Proceedings of the Academy of Natural Sciences 85: 121–162, pls. 6–11.
- Watters, G.T. 2006. The Caribbean land snail family Annulariidae: a revision of the higher taxa and a catalog of the species. Backhuys Publishers, Leiden, 557 pp.
- Watters, G.T. 2010. New taxa of Annulariidae from Dominican Republic (Gastropoda: Littorinoidea). Visaya 31: 16–20.
- Watters, G.T. and G. Duffy. 2010a. New species of Annulariidae (Gastropoda) from the Bahamas and Dominican Republic. Novapex 11: 1–12.
- Watters, G.T. and G. Duffy. 2010b. *Rolleia oberi*, new species—first record of the genus from the Dominican Republic, with a lectotype designation of *Cyclotus martensi* Maltzan, 1888 (Gastropoda: Annulariidae). The Nautilus 124: 185–187.